Rhodora

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THE POLLINATION OF RHODORA

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(Plate 222)

ONE of the most beautiful of early-blooming New England shrubs is rhodora, *Rhododendron canadense* Torr., which in May, before the appearance of the leaves, produces numerous clusters of rose-colored flowers. It is sometimes described as rare, but at Waldoboro, Maine, thousands of these shrubs may be found growing in damp, open pasture lands and in sphagnum bogs.

In 1881, Hildebrand in his "Flora" gave a brief account of its pollination; but otherwise its ecology has received little attention. The large, short-pedicelled flowers are bilabiate, about 2 cm. long by 4 cm. broad. The upper lip is 3-lobed, but the two lower petals are nearly distinct, oblong-narrow, and quickly become recurved. There are ten stamens, the five lower being longer than the five upper, but they are not as long as the style so that self-pollination is not likely to occur. The filaments are purplish, covered with short white hairs at the base; the anthers open by apical pores; the pollen is white in tetrads which are joined together by sticky threads of viscin. All of the pores are turned toward the center of the flower by the bending of the upper portion of the filaments. Thus a female bumblebee can not pass between them without coming in contact with the pollen which is held on the ends of the anthers by the viscin threads.

The stigma is five-lobed and very glutinous. At the beginning of anthesis it is firmly held in a little cap formed by the apex of the middle lobe of the upper lip, while the style under tension is sharply bowed in the middle. At this stage pollination is impossible. The

anthers dehisce as soon as the flower opens, and if the pollen is all removed before the stigma is released, autogamy can not occur. In five flowers the stigma was observed to be covered by the tip of one of the lower petals, and, when it became reflexed, was carried down with it. The continued elongation of the style causes the stigma to spring out of the cap of the upper lip, after which it moves downward projecting beyond the anthers. A queen bumblebee coming from another flower, if dusted with pollen, would then touch the stigma first and effect cross-pollination. If there still remained pollen in the anthers, it might be transferred by insects, especially by small bees and flies, to the stigma. Occasionally a stamen is as long as the style, and autogamy may occur by the anther and stigma coming in contact. One such case was observed.

Minute drops of nectar were observed on the receptacle between the upper lip of the corolla and the base of the filaments. The floral tube is very short, and the tongue of a queen bumblebee can reach the nectar through small openings between the filaments. Dark purple lines usually two in number on the inner side of the upper lip may serve as honey guides.

VISITORS: *Bombus terricola* Kirby ♀; *B. ternarius* Say ♀; *B. fervidus* Fabr. ♀; *B. vagans* Cr. ♀; *B. bimaculatus* Cr. ♀; *Apis mellifica* L. ☿; *Halictus pilosus* Sm. ♀; and the fly *Eristalis bastardii* Macq. May 20 to June 4. Waldoboro, Maine.

Rhodora is a bumblebee flower and is pollinated by female bumblebees, the only caste of this genus on the wing in May. The head of the bumblebee touches the upper, and the ventral side of the abdomen the lower anthers. The honey-bee is only an occasional visitor and it is doubtful if it can reach the nectar. There is no reliable record of a surplus of honey ever being gathered from this or any other species of rhododendron or azalea. A beekeeper at Divide, West Virginia, writes that he was unable to find a single honey-bee on the bloom of the rhododendrons, though they cover the land for mile after mile.

WALDOBORO, MAINE.

AN ADDITION TO THE WOOL-WASTE FLORA OF EASTERN MASSACHUSETTS.—On Sept. 14, 1932, Mr. John A. Collins, Jr., observed in the yard of the Arlington woolen mills at Lawrence a strange weed. As he graphically described it, it had a stem an inch in diameter at the base, about four feet long and trailing on the ground; leaves like a